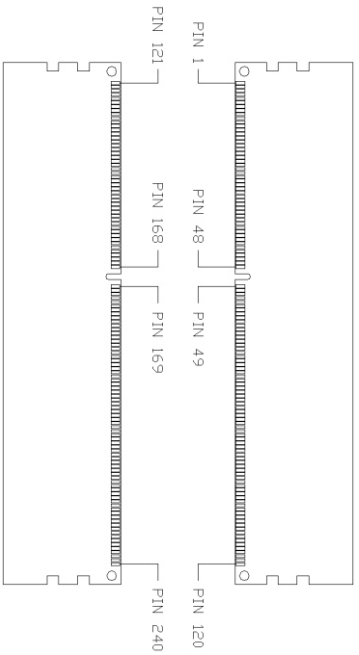
GP 2133 D3 64 L10AS 4G

GOODRAM PRO
SPEED / DATA TRANSFER 2133MHz / PC3-17000
MODULE TYPE DDR3 SDRAM DIMM
MODULE DATA WIDTH 64
CAS LATENCY 10
MODULE DENSITY 4GB

DDR III MODULE PART NUMBERING SYSTEM

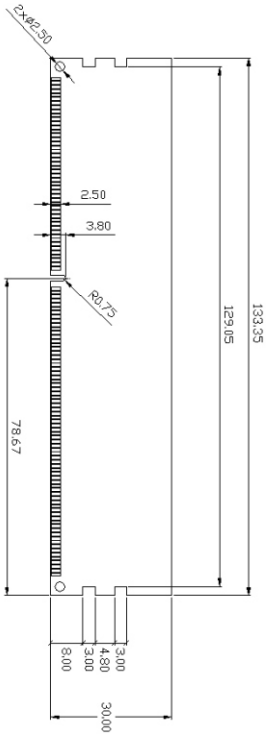


FEATURES

PART NUMBER	GP2133D364L10AS/4G
MODULE TYPE	DDR3 SDRAM DIMM
MODULE DENSITY	4GB
MODULE DATA WIDTH	64
DRAM COMPONENT ORAGNIZATION	512Mx8
NUMBER OF DRAM COMPONENTS	8
NUMBER OF MODULE RANKS	1
NUMBER OF MODULE SIDES	1
REGISTERED	NO
ECC SUPPORT	NO
PIN COUNT	240 PIN
SUPPLY VOLTAGE	1,5V
SSTL_15 COMPATIBLE	YES

DYNAMIC PARAMETERS FOR 2133MHz*

CAS LATENCY	10
RAS# TO CAS# DELAY, tRCD	11
ROW PRECHARGE TIME, tRP	11
ACTIVE TO PRECHARGE TIME, tRAS	30



PCB DETAILS

PCB TYPE	DDR3 SDRAM DIMM
BOARD DIMENSIONS	133,35 x 30mm ± 0,1mm
BOARD THICKNESS	1,27mm ± 0,1mm
DRAM PACKAGE INFORMATION	FBGA, x8bit
CONTACT PADS (PIN)	GOLD PLATED

*To run operating frequency 2133MHz and listed timings, please kindly set them in BIOS manually. See motherboard's user manual.

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SPD CONFIGURATION

BYTE	DESCRIPTION	HEX	DEC
0	Number of Serial PD Bytes Written / SPD Device Size / CRC Coverage	0x92	146
1	SPD Revision	0x10	16
2	Key Byte / DRAM Device Type	0x0B	11
3	Key Byte / Module Type	0x02	2
4	SDRAM Density and Banks	0x04	4
5	SDRAM Addressing	0x21	33
6	Reserved	0x00	0
7	Module Organization	0x01	1
8	Module Memory Bus Width	0x03	3
9	Fine Timebase Dividend and Divisor	0x52	82
10	Medium Timebase Dividend	0x01	1
11	Medium Timebase Divisor	0x08	8
12	SDRAM Maximum Cycle Time (tCKmax)	0x0A	10
13	Reserved	0x00	0
14	CAS Latencies Supported, Least Significant Byte	0xFC	252
15	CAS Latencies Supported, Most Significant Byte	0x00	0
16	Minimum CAS Latency Time(tAAmin)	0x69	105
17	Minimum Write Recovery Time (tWRmin)	0x78	120
18	Minimum RAS# to CAS# Delay Time (tRCDmin)	0x69	105
19	Minimum Row Active to Row Active Delay Time (tRRDmin)	0x30	48
20	Minimum Row Precharge Time (tRPmin)	0x69	105
21	Upper Nibbles for tRAS and tRC	0x11	17
22	Minimum Active to Precharge Time (tRASmin), Least Significant Byte	0x18	24
23	Minimum Active to Active/Refresh Time (tRCmin), Least Significatn	0x81	129
24	Minimum Refresh Recovery Time (tRFCmin), Least Significant Byte	0x20	32
25	Minimum Refresh Recovery Time (tRFCmin), Most Significant Byte	0x08	8
26	Minimum Internal Write to Read Command Delay Time (tWTRmin)	0x3C	60
27	Minimum Internal Read to Precharge Command Delay Time (tRTPmin)	0x3C	60
28	Upper Nibble for tFAW	0x00	0
29	Minimum Four Activate WIndow Delay Time (tFAWmin), Least Significa	0xF0	240
30	SDRAM Output Drivers supported	0x83	131
31	SDRAM Thermal and Refresh Options	0x88	136
32-59	Reserved, General Section	0x00	0
60	Module Nominal Height	0x0F	15
61	Module Maximum Thickness	0x11	17
62	Reference Raw Card Used	0x00	0
63	Address Mapping from Edge Connector to DRAM	0x00	0
64-116	Reserved	0x00	0
117	Module Manufacturer ID Code, Least Significant Byte	0x07	7
118	Module Manufacturer ID Code, Most Significant Byte	0x5D	93
119	Module ID: Module Manufacturing Location	0x00	0
120	Module ID: Module Manufacturing Date	0x00	0
121	Module ID: Module Manufacturing Date	0x00	0
122	Module ID : Module Serial Number	0x00	0
123	Module ID : Module Serial Number	0x00	0
124	Module ID : Module Serial Number	0x00	0
125	Module ID : Module Serial Number	0x00	0
126	Cyclic Redundancy Code	0x13	19
127	Cyclic Redundancy Code	0xCD	205

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